



COMMENT

Received 20 Apr 2015 | Accepted 5 May 2015 | Published 2 Jul 2015

DOI: [10.1057/palcomms.2015.15](https://doi.org/10.1057/palcomms.2015.15)

OPEN

The embodied mind: when biology meets culture and society

Ib Bondebjerg¹

ABSTRACT Since the 1980s the study of the brain has developed from being a primarily biological field to a significant interdisciplinary area with a strong influence on the humanities and social sciences. In this article I describe fundamental elements in what I call the embodied mind paradigm, and new understanding of the relation between mind, body and emotions. The new paradigm challenges certain notions of constructivism in the humanities and social sciences, but also opens up fruitful venues for new interdisciplinary research. Here I outline such possibilities in the particular areas of linguistics, philosophy, sociology and film studies. This article is published as part of an ongoing collection dedicated to interdisciplinary research.

¹ Department of Media, Cognition and Communication, University of Copenhagen, Copenhagen, Denmark (e-mail: bonde@hum.ku.dk)

Introduction

In a recent portrait of and interview, the young, very successful Danish theatre director, Elisa Kragerup, was asked what influenced her decision over which plays to put on stage: “Working with theatre is for me a way to engage in what it is to be human. When my passion for something is awoken, it is because I feel it in my body, when it gives me a physical feeling (...). It is a very physical thing to work with both the higher and the deeper aspects of being human (...) The body is a language, which can be used to tell transformation stories” (Skotte, 2015). It is not often that we hear a person working with an art form, such as the theatre, talk so directly about the body and emotions when defining creative work. Some theatre or film directors, or some authors might tend to talk about the more rational, abstract and intellectual dimensions of art and creativity. Yet most creative people know that the body, the emotions, what we feel about something, are deeply imbedded in all forms of art and communication. Indeed, the ancient Greek and Roman rhetorical traditions talk about logos, ethos and pathos as part of a successful communication.

Two cultures revisited

In a way it should not be controversial to point to biology and neurology as a fundamental dimension for research in the humanities and social sciences. It ought to be common sense to connect elements from biology, the natural sciences, humanities and social sciences to get a deeper understanding of how our society and culture, our art forms and types of communication, are linked to the concept of our embodied mind. However, the split and controversy, pointed out by Snow in his original lecture and the book that followed, *The Two Cultures* (1956/59, republished 2012), between natural sciences and the humanities and social sciences still exist. In the humanities and social sciences there is a strong trend towards constructivist views, and biology and neurology often signal a kind of determinism to those in these fields of research. It should not, however, come as a surprise to researchers in the humanities and social sciences, that the human mind and body are the result of a very long and slow evolutionary history. After all, Darwin was not born yesterday, and Darwinism is a firmly established paradigm for the understanding of how humans develop and the interaction between our biology and the natural and social context work. It is not a deterministic theory, but a theory that teaches us to look carefully into *both* the very fundamental dimensions of how our body and mind functions, *and* the social, historical and cultural context in which we live.

C P Snow was already wondering why it was expected that people in the natural sciences should know the fundamentals of culture and society in order to be considered educated citizens, whereas those in the humanities and social science considered some of the most basic aspects of natural science irrelevant. What we see today in the new interdisciplinary embodied mind paradigm is often that across the split, which Snow described, the humanities, social sciences and natural sciences collaborate and enter one another's territory. Researchers with a natural sciences background—like for instance the Danish neurologist and Oxford professor Morten Kringelbach or the American neurologist Antonio Damasio—enter art studies and philosophy through books like *Mind Space. The Emotional Brain* (Kringelbach, in Danish, 2004) and *Self Comes to Mind. Constructing the Conscious Brain* (Damasio, 2010). Conversely, linguists, such as American Lakoff and philosopher Johnson, start developing an embodied theory of language and meaning in *Metaphors We Live By* (1980). Furthermore, in film, media and literary studies, and studies of creativity, the embodied mind

paradigm is strong, for instance in Turner's *The Literary Mind* (1996), Ed Tan's *Emotion and the Structure of Narrative Film* (1996) or the more popular book by Gottschall, *The Storytelling Animal. How Stories Make us Human* (2012), which combines psychology, sociology, aesthetics and neurology.

Descartes' error: the neurological turn

From 1994 to 1997, I was a member of European Science Foundation's Standing Committee for The Humanities. ESF-Humanities has always been very dedicated to the development of interdisciplinary research, not just with the social sciences, but also the various branches of natural sciences. ESF was located in Strasbourg, and in 1995 a strike made the trip back to Copenhagen very long. However, I had brought with me Damasio's book *Descartes' Error. Emotion, Reason and the Human Brain* (1994), simply because I found the title so intriguing, and I had plenty of time to read what for me became a bit of a revelation and led to my own personal neurological turn. What the book does is to use compelling neurological research to raise and give answers to questions that have profound importance for the understanding of humans, culture and society. The fascinating thing about the book is that Damasio can move seamlessly between biology, neurology, philosophy and psychology. His introduction is also a personal story of factors that changed his own understanding of things and the fundamental way in which we generally look upon and evaluate, for instance, the relation between rationality and emotions:

I had grown up accustomed to thinking that the mechanisms of reason existed in a separate province of the mind, where emotion should not be allowed to intrude, and when I thought of the brain behind that mind, I envisioned separate neural systems for reason and emotion. This was the widely held view of the relation between reason and emotion, in mental and neural terms. (Damasio, 1994: xii)

What the book argues for, through different case studies of persons with specific forms of brain damage and more general neurological arguments, is that this widely held concept is completely wrong. Feelings, memory and perceptual images play an important role for our reasoning, and because the body and the mind are so connected, feelings and reasoning interact; feelings play an important role for our minds and for our ability to act in society. As Damasio points out, feelings and emotions are not a luxury, they are in fact as “cognitive as other percepts” (xv), and they guide our decision making and reasoning in important ways. So Descartes' error was that his sentence “Cogito ergo sum” (I think therefore I am) created an “abyssal separation of body and mind (...) the separation of the most refined operations of the mind from the structure and operation of a biological organism” (Damasio, 1994: 249–250).

This general argument for an embodied mind, for the biological basis of both reason and emotion has been taken further and discussed in many books both with a philosophical agenda and with a more creative and communicative agenda. In one of his later books, *Self Comes to Mind. Construction the Conscious Brain* (2010), Damasio himself develops a theory of the self that is based on the embodied mind framework. The self, who we are and what we feel and think as a “me”, is, according to Damasio (2010: 22–23), a very complicated process in which the self is constituted by three different kinds of self: the “protoself” with the primordial feelings, mainly in the cerebral cortex and brain stem; the “core self” or what he calls a “material me” where interactions between the organism and objects take place, and “the autobiographical self”, which is our aggregated knowledge

and memory of both the past and projections of the future. Finally we have what Damasio calls “a knower”, where the core and autobiographical self give our minds a “subjectivity”.

Damasio is not a philosopher, but his theories and biological empirical evidence has been taken up and critically discussed by some of our most interesting new philosophers, for instance in Zahavi's new book *Self and Other* (2014). Zahavi's book represents an important interdisciplinary attempt to connect classical phenomenology and philosophy with the new trends in the philosophy of the mind. Such an attempt to expand the embodied mind theory into philosophy and challenge the whole Western tradition for understanding rational and cognitive processes is also strongly represented in Lakoff and Johnson's *Philosophy in the Flesh. The Embodied Mind and Its Challenge to Western Thought* (1999). In effect what the book says is: the mind is inherently embodied, thought is mostly unconscious and abstract concepts are largely metaphorical. What the book also argues for, based on cognitive science, is that commonalities and universality, when we talk of human societies and culture, are much more dominant and important than differences. This again does not mean that culture and society are not important; it simply means that the social and cultural diversity, or the historical and national differences, we can observe, are built onto our embodied minds, which ensure a strong commonality beneath our variations.

The social mind: new cognitive sociology

Generally speaking the new embodied mind paradigm is not an erosion of the things humanities and social sciences have been researching for years: how cultures communicate and interact, how the creative and artistic dimension of our life, how societies and politics are formed, and so on. Rather, this new cognitive-emotional theory offers a new foundation of cultural and social studies of societies and historical development. Damasio (2010), who is in fact very conscious about the kind of controversy his theory and biological framework can create outside natural sciences, has said this very explicitly:

Naturalizing the conscious mind and planting it firmly in the brain does not diminish the role of culture in the construction of human beings, does not reduce human dignity, and does not mark the end of mystery and puzzlement. Cultures arise and evolve from collective efforts of human brains over many generations, and some cultures even die in the process. They require brains that have already been shaped by prior cultural effects. The significance of cultures to the making of the modern human mind is not in question. Nor is the dignity of that human mind diminished by connecting it to the astonishing complexity and beauty to be found inside living cells and tissues. (27)

This strong statement from Damasio is reflected in different forms of cognitive sociology, an already firmly established subdiscipline represented, for example, in a text-book like Fiske and Taylor's *Social Cognition* (1991, and many later editions). Here social cognitive processes are described through, for instance, schema theory, the social categories we use in social interaction, in connection with self-understanding and memory, attribution theory, and affects and cognition and their role in the building of attitudes for instance. Although social cognition like this is not directly linked to the new dimensions of the embodied mind framework, and the link to biology and neurology is thinner, there is definitely a shared common ground that can be developed further. This is also the case with other approaches to

cognitive sociology, for instance Zerubavel's *Social Mindscapes. An Invitation to Cognitive Sociology* (1999).

Zerubavel's book offers what he calls a general outline of a “sociology of the mind”, and in the opening chapter he argues that the need for a cognitive sociology really stems from a still very dominant trend in cognitive science to study individual brains and forms of cognition, “cognitive individualism” (Zerubavel, 1999: 2). Like Damasio (but without direct reference) he sees the rise of modern cognitive science as coinciding with the decline of the “Romantic vision of the individual thinker” (Ibid.). In a model of dimensions cognitive sociology, Zerubavel (1999) talks about three fundamental dimensions of cognitive sociology: *cognitive individualism*, *cognitive sociology* and *cognitive universalism* (20). These dimensions on the one hand point to very subjective, personal dimensions of our social cognition, and on the other hand to universal cognitive commonalities that are related to the deep biological dimensions of social cognition that we share as human being, despite our differences. At the centre we then find the more collective, historical, subcultural dimensions of social cognitions, the things that are formed by our being members of “thought communities”.

Therefore, despite his attack on the romantic notion of the individual and his strong argument for cognitive theories that play down our cognitive individualism and differences and support the cognitive universalism or our cognitive commonality as human beings, Zerubavel (1999) focuses on the interplay between cognitive universalism and a cognitive sociology focusing on cognitive diversity and differences (10–11). In an almost paradoxical way Zerubavel actually argues that being aware of what is universal and common for all human beings makes it much clearer how we can approach collective processes of cognitive socialization and formation of social thought communities, subcultures and structures of collective memory or shared cultural experiences. The universality of our embodied mind and foundation for our experiences is not in opposition to the analysis of the cognitive diversity and pluralism we find in modern cultures.

When cognitive sociology and linguistics is used in actual research of contemporary matters, such as it is the case with George Lakoff's *The Political Mind* (2008), the reaction can, however, be quite strong. In his review in the *New York Times*, Saletan (2008) simply called the book “Neuro-Liberalism”, and what happens in this review is basically that Saletan reacts against the biological dimensions as if they form a deterministic framework for Lakoff's comparative analysis of Republican and Democrat political discourses:

In place of neoliberalism, he offers neoliberalism. Since voters' opinions are neither logical nor self-made, they should be altered, not obeyed. Politicians should “not follow polls but use them to see how they can change public opinion to their moral worldview.” And since persuasion is mechanical, progressives should rely less on facts and more on images and drama, “casting progressives as heroes, and by implication, conservatives as villains.” The key is to “say things not once, but over and over. Brains change when ideas are repeatedly activated. (Saletan, 2008)

What Lakoff is trying to analyse, however, are different political discourses and how they relate to the way our brain basically works through links between emotion and reason, through metaphor, narrative and dramatic oppositions. He is, in a way, just continuing the work done by rhetorical research for centuries on which speeches have had an impact and which have not, and why that is. Abstract facts and arguments are not enough in themselves, and to state that is not deterministic, but based on solid neurological research, and which is not in opposition to demands for truth, facts and reason.

Moving images, culture and the mind

The study of moving images, of film, television and more recently the internet and social media have gone through some of the same theoretical main trends as other areas of the humanities and social sciences: strong aesthetic, cultural paradigms have existed alongside more sociological approaches. Around 1985 cognitive theory developed rapidly in film and media studies. Bordwell's book *Narration in the Fiction Film* (1985) became an influential starting point for theories of genres and narrative structures in film and other media that combined both formalist, structural analysis and cognitive and psychological ways of describing film comprehension. By defining and describing very fundamental and universal forms of film narration (for instance classical narration and art cinema narration) he went against a tendency to see genres primarily as historically and culturally constructed. The viewer here emerged not primarily as a socially and culturally constructed viewer, but as a viewer constituted by the fundamental dimensions of cognitive and emotional involvement in film and narrative structures.

This attempt to establish very fundamental, universal genres and modes of reception in film is further developed in Grodal's two books *Moving Pictures. A new Theory of Film, Genres, Feelings and Cognition* (1997) and *Embodied Visions. Evolution, Emotion, Culture and Film* (2009). Grodal defines basic genres through the emotional responses and typical moods activated in the spectator of different types of films. The different genres also involve aspects of active and passive relations with narrative forms and characters. Besides the classical, canonical narrative Grodal deals with classical genres also described in other film theories such as comedy and melodrama. However, he also talks about, for instance, associative lyricism, obsessional paratelic fictions and metafiction. Such genres, defined by specific cognitive and emotional elements, have universal dimensions, but they are also influenced by historical, social and cultural factors, which create variations. Visual fiction is thus seen as mental structures modelled on the basis of a simulated reality of actions and emotions to which we react with much the same experiences and capacities as in real-life experiences. The book thus argues that many of the fundamental structures of film experience are based on embodied emotional and cognitive patterns that interact with the concrete social and historical context of audiences.

Grodal's theory of film genres as embodied flow (see also Bondebjerg, 2015) explains the popularity of specific genres and their relation to basic mental and emotional activities and experiences. However, there is no fundamental conflict between a cultural, historical and stylistic approach to visual fictions and Grodal's position, but the experience and processing of moving images cannot be described as culturally constructed in any short-term sense. In the introduction to his second book Grodal makes the same statements, as those researchers already cited, about why the embodied mind theory represents a major shift in the humanities and social sciences. He refers to Damasio's statement that film is actually a good illustration of how consciousness functions, because the filmic experience in many ways simulates the real-world experience, and because it illustrates that levels of a bodily and biopsychological nature, far below language and consciousness, are activated (Grodal, 2009: 13).

As such, when traditional film scholars—or language and literature scholars—only see a culturally and historically constructed language, they miss the dialectic between mind, body and society. Both social theory and constructivism tend to see the mind as a blank slate from birth on which culture and society make their imprints (see Barkow *et al.*, 1992). But as the embodied mind theory has shown through both experimental, clinical research and empirical sociological research this is out of touch with the fundamental dynamic between biology, sociology

and culture. Humans come with a very strong biological framework that is by nature universal and interacts with society and culture in much more complex ways. In film research this problem has been studied theoretically and experimentally by Ed Tan in *Emotion and the Structure of Narrative Film* (1996)—the subtitle “Film as an Emotion Machine”, indicates what it is about. He is not trying to deal with all aspects of film experience and cultural and social aspects of cinema; rather, he is trying to focus on how viewers emotionally involve with classical narrative films and how those emotions are created between screen and viewers both bodily and mentally.

This is also very much the agenda for Carl Plantinga's *Moving Viewers. American Film and the Spectator's Experience* (2009). He criticizes the main trend in cultural studies and aesthetic theories of cinema and media and the way in which they primarily look for hidden meanings and tend to look for abstract propositions, messages and themes. Furthermore, he criticises the dominant forms of empirical audience research for not dealing with emotions. He sees the cultural studies paradigm as a result deep down of the same dichotomy between biology and culture, between reason and emotion that for decades have haunted Western thought and have led to a misunderstanding of emotions as counterproductive for logical and critical thought (Plantinga, 2009: 4).

Towards a new interdisciplinary agenda: biology, culture and society

We are biological creatures just as much as we are cultural and social creatures. We are born with a brain and a body before we are even defined as individuals and citizens in a specific society; we are universal in the making, before we get a specific language and are formed by the circumstances and times we live in. Modern theories of cognition and emotion point to the fact that we have much the same emotions, although different societies and social circumstances can teach us and influence how we control or exhibit them. Since man developed language, we have always told stories, drawn pictures in ways that have strong universal elements, and this has also been a basis for great diversity and historical variation. There seems to be strong universal patterns beneath the way these creative and communicative formats are developed.

Unlike what traditional cultural studies and sociology tend to infer, biology and evolution show that we are not born like a blank slate, and constructed from scratch as cultural and social beings. Our body, biology, brain and neural system play a very crucial role for how we are formed, but at the same time biology, culture and society certainly interact in very specific ways. We are not just individuals created by our own history and development, we are not just social and group-determined individuals—we are in fact also individuals with a strong evolutionary ballast of biological nature and with universal dimensions. Emotions are not just a by-product of evolution, only there to be controlled or suppressed, fiction and narratives are not just entertainment to be avoided by rational thought, they are actually very basic and universal structures through which we understand and make sense of the world. Reason, logic, facts and so on are just as necessary, but they exist as part of the same biological make up of all human beings, and they are historically equally as important for our cultural and social life.

Interdisciplinary collaboration and dialogue across disciplines are more important than ever for the understanding of humans in culture and society, and biology is an integrated dimension in that understanding (Bondebjerg, 2000). Biology and neurology have made major advances in knowledge of the human body and brain over the last five decades. Technologies to study the living brain are beginning to appear, and this development will make it

possible to study art and communication from new angles with the emotional and thinking parts of our experience in focus. Research in film and media studies, but also in social media and networking, in game studies, memory studies, and in the creative arts, offer much potential in such an interdisciplinary endeavour.

References

- Barkow J, Cosmides L and Tooby J (1992) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. Oxford University Press: New York.
- Bondebjerg I (2000) *Moving Images, Culture and the Mind*. University of Luton Press: Luton.
- Bondebjerg I (2015) Film: genres and genre theory. In: Wright J D (ed). *International Encyclopedia of the Social & Behavioral Sciences*, 2nd edition, Vol. 9. Elsevier: Oxford, pp 160–164.
- Bordwell D (1985) *Narration in the Fiction Film*. The University of Wisconsin Press: Madison–Wisconsin.
- Damasio A (1994) *Descartes' Error. Emotion, Reason and the Human Brain*. Avon Books: New York.
- Damasio A (2010) *Self Comes to Mind. Construction the Conscious Brain*. Vintage Books: New York.
- Fiske S T and Taylor S E (1991) *Social Cognition*. McGraw Hill: New York.
- Grodal T K (1997) *Moving Pictures. A New Theory of Film, Genres, Feelings and Cognition*. Oxford University Press: Oxford.
- Grodal T K (2009) *Embodied Visions. Evolution, Emotion, Culture and Film*. Oxford University Press: Oxford.
- Gottschall J (2012) *The Storytelling Animal. How Stories Make us Human*. Mariner Books: New York.
- Kringelbach M (2004) *Hjernerum. Den følelsesfulde hjerne/Mind Space. The Emotional Brain*. People's Press: Copenhagen.
- Lakoff G (2008) *The Political Mind*. New York: Penguin Books.
- Lakoff G and Johnson M (1980) *Metaphors We Live By*. Chicago University Press: Chicago.
- Lakoff G and Johnson M (1999) *Philosophy in the Flesh. The Embodied Mind and Its Challenge to Western Thought*. Basic Books: New York.
- Plantiga C (2009) *Moving Viewers. American Film and the Spectator's Experience*. University of California Press: Berkeley.
- Saletan W (2008) Neuro-liberalism. *New York Times*, 22 June.
- Skotte K (2015) Vi lyver for at få sandheden frem. Interview med Elisa Kragerup/We lie to reach the truth. Interview with Elisa Kragerup. *Politiken*, 9 March.
- Snow C P (1956/59, 2012) *The Two Cultures*. Cambridge University Press: Cambridge–New York.
- Tan E (1996) *Emotion and the Structure of Narrative Film*. Routledge: New York and London.
- Turner M (1996) *The Literary Mind. The Origins of Thought and Language*. Oxford University Press: Oxford.
- Zahavi D (2014) *Self and Other*. Oxford University Press: Oxford.
- Zerubavel E (1999) *Social Mindscapes. An Invitation to Cognitive Sociology*. Harvard University Press: Cambridge, MA.

Additional Information

Competing interests: The author declares no competing financial interests.

Reprints and permission information is available at http://www.palgrave-journals.com/pal/authors/rights_and_permissions.html

How to cite this article: Bondebjerg I (2015) The embodied mind: when biology meets culture and society. *Palgrave Communications* 1:15015 doi: 10.1057/palcomms.2015.15.



This work is licensed under a Creative Commons Attribution 3.0 International License. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in the credit line; if the material is not included under the Creative Commons license, users will need to obtain permission from the license holder to reproduce the material. To view a copy of this license, visit <http://creativecommons.org/licenses/by/3.0/>